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GENERIC CONSIDERATIONS CONCERNING CARPHEPHORUS, TRILISA AND LITRISA (COMPOSITAE)

CHARLES W. JAMES

Carphephorus Cass. (4 species), and *Trilisa* (Cass.) Cass. (2 species) and the monotypic *Litrisa* Small (merged with *Trilisa* by Robinson, 1934), are closely related genera in the Eupatorieae. They are allied to *Liatris* Schreb. and *Garberia* Gray with which they form a seemingly natural segregate of the subtribe Kuhniinae. Primarily of the Coastal Plain, they are known only from the southeastern United States; southeastern Virginia to south Florida and westward into eastern Louisiana. All of the seven species appear distinctive and present relatively little variation. The present problem is one of generic limits, the basis of which is presented in the following historical account.

In describing *Carphephorus*, Cassini (1816) stated that it differed from *Liatris* in that the receptacle was provided with pales and the pappus bristles were non-plumose. Later (1818), he recognized *Trilisa* as a subgenus of *Liatris*, as typified by *Liatris odoratissima*. The rank of subgenus was considered sufficient for this taxon because there was observed in *Liatris* a short-plumose (barbellée) pappus which was intermediate between true *Liatris* whose pappus was long-plumose (barbée), and *Trilisa* whose pappus was barbed (barbellulée). He further stated that *Trilisa* had the greatest affinity with *Carphephorus*, from which it differed by the absence of pales. Although he directly proceeded to point out that a few pales were occasionally observed even in the subgenus *Trilisa*. In 1820, Cassini raised *Trilisa* to generic status without further discussion. Not until 1828, how-

ever, were any species actually transferred to it. At this time Cassini cited *Liatris odoratissima* and *Liatris paniculata* of Willdenow (1803)[1] as species of *Trilisa* and summarized his previous comments on these genera.

It is Cassini's remark (apparently overlooked, subsequently) of the occasional presence of some pales in *Trilisa odoratissima* that has prompted the question of the generic limits in *Carphephorus* and *Trilisa*, and also *Litrisa*. The last named "genus" has only one species, *Litrisa carnosa* Small, an endemic of east, central Florida. In describing it, Small (1924) wrote, "Technically it is most closely related on the one hand to *Trilisa*, by its involucre, and on the other, to *Carphephorus*, by its chaffy receptacle." It is implied here, as has been customary, that *Trilisa* has a naked receptacle. After the publication of Small's manual (1933), Robinson (1934) noticed that Small contradicted himself by keying out *Litrisa* as having "Receptacle naked." In a study of the type collection, as well as other material, Robinson made several sketches, one of which bears the annotation, "No scales on disk." Since he then proceeded to transfer *Litrisa carnosa* to the genus *Trilisa*, rather than *Carphephorus*, the implication is again that *Trilisa* lacks pales. Presumably, if Robinson had seen any pales in *Litrisa carnosa*, he would have transferred it to *Carphephorus*, for he was not impressed by the differences in the involucres.

Upon examination of all of the species of the genera under consideration, I conclude that pales may be borne in any one of the species. They are most abundant in *C. pseudo-liatris* and *C. corymbosus*. Their number also varies, as might be expected, with the size of the heads. Since the heads are typically smaller in the two *Trilisa* species and in *Litrisa* (involucres ca. 4–5 mm. high), than in *Carphephorus* (involucres ca. 6–10 mm. high), the number of pales per head as a primary generic character would

[1] Willdenow took both epithets, "odoratissima" and "paniculata" from Walter (1788), who had employed them with "Anonymos." However, Michaux, also in 1803, transferred these "Anonymos" species of Walter to *Liatris*. According to Schubert (1942), Michaux's Flora preceded this particular volume of Willdenow's. Consequently, the citation of these binomials should be: *Trilisa odoratissima* (Michx.) Cass. and *Trilisa paniculata* (Michx.) Cass.

[2] The presence of pales in these genera is unique in the tribe Eupatorieae. Bentham (1873) says, "Receptaculum plus minus paleaceum in Decachaetae, Alomine, et Agerati speciebus paucis et in Carphephorus." They are also present in *Hartwrightia* Gray ex S. Wats. Furthermore, they are little, if at all, specialized; the peripheral ones, particularly, are very similar to the phyllaries, with which they have been considered homologous.

seem questionable. The pales are also deciduous, a factor perhaps accounting for discrepancies in determining their presence[2] or absence.

The only other known morphological basis for these genera is found in the involucre. In *Carphephorus*, the phyllaries are well-imbricated in 3–6 series; the involucre 6–10 mm. high. In *Trilisa*, the phyllaries are in 1–2(–3) series, scarcely, if at all, imbricate, the involucre 4–5 mm. high. However, in *Litrisa*, the phyllaries are well-imbricated, but only in 2–3 series and the involucre is 4–5 mm. high.

Cytological studies (Gaiser, 1954) in these genera have yielded no evidence for the maintenance of *Trilisa* or *Litrisa* as distinct from *Carphephorus*. In all of the species $2n = 20$. "One karyotype is believed to be common to these two species [*Trilisa paniculata* and *Trilisa odoratissima*] and it has been found to be indistinguishable from that of *Carphephorus*." Concerning *Litrisa carnosa*, "The number ($2n = 20$) and approximately the same kinds of chromosomes as found in the other two species [of *Trilisa*] were sketched from cells not adequate for photography. However, lacking sufficient material for careful studies, the karyotype of this species cannot be included at this time." The only other genera in the subtribe Kuhniinae in which $n = 10$[2] are *Garberia* and *Liatris*, both of which have long been suspected of being closely related to the genera in question by their morphological similarities. Neither of these genera has been reported to have pales. The monotypic *Garberia*, represented by *G. heterophylla* (Bartr.) Merrill & F. Harper (*G. fruticosa* (Nutt.) Gray), is endemic to the sand scrubs of central Florida and is the only woody member having $n = 10$. Also, its karyotype is distinctive. Although karyotypes have not been determined for all of the species of *Liatris*, some intra-generic variation in karyotype has been detected. Certainly there is as much variation, morphological as well as cytological, in the one genus *Liatris* (cf. Gaiser, 1946; 1949; 1950) as there is in the whole *Carphephorus-Trilisa-Litrisa* complex.

As it now stands, the primary basis for *Trilisa* (including *Litrisa*, as Robinson did) seems to rest entirely on the size of the

[2] Other basic numbers in the subtribe are 9 and 11; only the South American genus, *Kuhnia*, has not been examined cytologically.

involucres. If, however, *Litrisa carnosa* were transferred to *Carphephorus*, the primary generic distinction could then be based on whether or not the phyllaries were imbricate. The latter character would appear to segregate the species much more naturally. This apparently was R. M. Harper's view, also, for he collected *Trilisa carnosa* before it was described (St. Lucie Co.: flat pine woods about 2 mi. w. of Fort Pierce, Fla., 23 Aug. 1923, GH), and annotated it "*Carphephorus* (?) n. sp." This same character has been used as a primary basis for distinguishing *Bric llia* from *Kuhnia* (cf. Robinson 1913; 1917), also in the *Kuhniinae*, but having $n = 9$. Shinners (1946) considered this a very weak basis, but in this case was able to point out additional reasons to justify the continued recognition of those genera. In the present and somewhat comparable case, supplementary characters, if any, have not been found. But regardless of whether or not *Trilisa* is to be maintained as a genus, it appears best segregated at the present time on its non-imbricate phyllaries. Since the phyllaries of *Litrisa* are imbricate as in *Carphephorus*, it is proposed that *Litrisa carnosa* Small be transferred from *Trilisa* to *Carphephorus*. This action would be in agreement with McVaugh's (1945) recommendation six on the generic disposition of species having affinities with two or more genera. "Any segregate genus should be sharply delimited; that is, any species which is intermediate in one or more respects toward a more inclusive genus should be relegated to the latter. The retention of the anomalous species in the more inclusive genus will change its limits, if at all, but very slightly, and only in this way can the segregate genus be precisely defined." In this case, the "segregate genus" would be *Trilisa*, the "more inclusive genus"—*Carphephorus*, and the "anomalous species"—*Litrisa carnosa*.

Carphephorus carnosus (Small) James, comb. nov. based on *Litrisa carnosa* Small, Bull. Torr. Bot. Club **51**: 392. 1924. Type: *Small* **10658**, Istokpoga Prairie, east of Sebring, Florida, 31 Aug. 1922 (NY); photograph of type (GH). *Trilisa carnosa* (Small) Robinson, Contrib. Gray Herb. **104**: 49. 1934.

This species is endemic to the seasonally wet, low, sandy pine lands in east central to southern Florida. It is known from Brevard (GH), Charlotte (FLAS, GH), DeSoto (FLAS), Highlands (FLAS, GH), Martin (FLAS, GH), Okeechobee (FLAS, GH), Orange (FLAS, GH), Osceola (FLAS, GH), Polk (FLAS) and St. Lucie (GH) Counties.

Key to the Species

a. Phyllaries imbricate (in (2–)3–6 series), densely pubescent with eglandular trichomes or glabrous and erose-ciliate; involucre 4–10 mm. high ..... *Carphephorus* Cass.
b. Phyllaries (at least the inner) glabrous, the margins erose-ciliate, eglandular, obtuse.
c. Stems pubescent ..... 1. *C. corymbosus* (Nutt.) T. & G.
c. Stems glabrous ..... 2. *C. bellidifolius* (Michx.) T. & G.
b. Phyllaries with eglandular trichomes and colorless resin atoms (sometimes few), acute or apiculate.
d. Basal leaves long, needle-like ..... 3. *C. pseudo-liatris* Cass.
d. Basal leaves broad, linear or lanceolate.
e. Basal leaves lanceolate, usually pubescent, not leathery, ascending ..... 4. *C. tomentosus* (Michx.) T. & G.
e. Basal leaves linear or linear-lanceolate, glabrous, leathery, forming a depressed rosette (endemic to Florida) ..... 5. *C. carnosus* (Small) James.
a. Phyllaries scarcely, if at all imbricate (in 1–2(–3) series), glabrous or with few glandular trichomes or resinous atoms, the margins eciliate; involucre 4–5 mm. high ..... *Trilisa* (Cass.) Cass.
f. Stems glabrous ..... 6. *T. odoratissima* (Michx.) Cass.
f. Stems pubescent ..... 7. *T. paniculata* (Michx.) Cass.

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CHROMOSOME RACES IN THE CHRYSANTHEMUM LEUCANTHEMUM COMPLEX[1]

Gerald A. Mulligan[2]

In 1954, as the result of chromosome studies on Canadian weeds, the presence of two chromosome races in North American material of *Chrysanthemum leucanthemum* L. s.l., oxeye daisy, was detected. Subsequent study revealed that the abundant and widespread oxeye daisy of North America is diploid with 18 somatic chromosomes. Tetraploid plants do occur on this continent but the occurrences are not widespread.

I determined the number of chromosomes in 36 lots of material from different locations in Nfld., Lab., P.E.I., N.S., N.B., Que., Ont., B.C., and Me. A somatic number of 18 was determined on 32 lots of this material and the other 4 lots had 36 somatic chromosomes. The tetraploid plants were grown from seed collected at Batiscan, Lauzon and Lennoxville in the Province of Quebec and at Tidehead, New Brunswick. Cooper and Mahony (1935) counted 18 meiotic chromosomes on material from the campus of the University of Wisconsin and Martin and Smith (1955) counted 18 somatic chromosomes in material from Corvallis, Oregon. Three chromosome races of *C. leucanthemum* L. s.l., with somatic chromosome numbers of 18, 36 and 54, occur in Europe. I counted 36 chromosomes on material received from France and the U.S.S.R. and 54 mitotic chromosomes on two lots of material from Portugal. Other counts on European material were made by Polya (1950) on diploid plants and Negodi (1937), Ohrt in Tischler (1950) and Löve and Löve (1956) on tetraploid plants. Dowrick (1952) and Böcher and Larsen (1957) obtained somatic counts of 18, 36 and 54 on European material. Three tetraploid counts

[1] Contribution No. 1607 from the Botany and Plant Pathology Division, Science Service, Canada Department of Agriculture, Ottawa, Ontario.
[2] Assistant Botanist (Weed Investigations).

were obtained on Japanese material by Tahara (1915), (1921) and Shimotomai (1937).

The maximal inner width of pollen grains of the diploid, tetraploid and hexaploid plants counted was measured[3] and a correlation was found to exist between size of pollen grains and chromosome numbers. The pollen grains of diploid plants ranged from 16.3μ to 19.5μ, tetraploids from 19.5μ to 22.8μ and hexaploids from 22.8μ to 24.4μ. Pollen grains from 191 Canadian and United States herbarium specimens were measured. None of these specimens had pollen grains in the hexaploid size range. A total of 162 herbarium specimens collected in Nfld., Lab., N.S., P.E.I., N.B., Que., Ont., Man., Sask., Alta., B.C., Mass., Vt., N.Y., Va., W.Va., Mich., Minn., Colo., Mont., Ida., Wash., Nev., and Calif. had pollen grains in the diploid size range. The remaining 29 sheets had pollen grains that fell within the tetraploid size range. A total of 17 of these "tetraploids" had been collected in the area between Quebec City and Gaspé or in the vicinity of Granville and Digby, Nova Scotia. The other 12 herbarium sheets with tetraploid-size pollen grains were collected from other locations in Lab., Que., Ont., Man., B.C., Minn., and Wash. The inner diameters of pollen grains from 15 European herbarium specimens were examined and 12 sheets had pollen grains in the tetraploid size range, 2 in the diploid range and 1 in the hexaploid range.

It appears, from chromosome counts and pollen data, that most of the North American plants of *C. leucanthemum* L. s.l. are diploid although a small amount of our material is tetraploid. In Europe, the common *C. leucanthemum* L. s.l. is not diploid but tetraploid. Diploid plants seem to be slightly less common than tetraploids in Europe and hexaploids are rare. Dowrick in personal correspondence, dated December 2nd 1955, wrote: "Of the European *C. leucanthemum* plants which I have counted $2n = 36$ is by far the most frequent number. The $2n = 54$ plants came from Switzerland and the *one* count of $2n = 18$ from plants obtained from Ireland." Böcher and Larsen (1957) counted 26 lots of plants from 10 European countries and 9 lots were diploid, 16 tetraploid and 1 lot hexaploid.

The morphological differences between my diploids and tetraploids are similar to those given by Fernald (1903) when he de-

[3] Pollen was removed from open disk florets and stained with cotton blue in lacto-phenol. Only well stained pollen showing three open pores were measured.

scribed the characters differentiating his *Chrysanthemum leucanthemum* L. var. *subpinnatifidum* from what he considered the typical *C. leucanthemum* L. He recognized that the common ox-eye daisy of North America had in general a uniformly different type of foliage from the common plant of Europe and named the common North American plant var. *subpinnatifidum*. Fernald's variety has the characters of my diploid plants; the basal leaves generally coarsely and irregularly toothed and the middle and upper leaves usually narrowly oblong or oblanceolate, conspicuously subpinnatifid at the base. The characters he gave for the plant that is localized in North America and most common in Europe, the so called *C. leucanthemum* L., correspond to the morphological characters found in my tetraploids. The basal leaves are usually spatulate-obovate and closely and regularly crenate and the middle and upper leaves are usually oblong or oblanceolate, coarsely crenate or dentate above with larger spreading teeth at the base.

Böcher and Larsen (1957) examined the type specimen of *Chrysanthemum leucanthemum* L. in the British Museum. This plant although lacking stem leaves had diploid size pollen grains and was considered by the authors to be morphologically similar to their diploid plants. They include in their paper an excellent photograph of a diploid plant originally collected at Edenderry, Eire. This photograph and their description of the European diploids convince me that their diploids are morphologically indistinguishable from my diploids and the common oxeye daisy of North America. It can be concluded that our common oxeye daisy is *Chrysanthemum leucanthemum* L. s. str. Böcher and Larsen believe that European tetraploid plants should be placed in *Chrysanthemum ircutianum* Turcz. s.l. From the photographs and description in their paper it is evident that our North American tetraploids are very similar in morphology to their tetraploids. Unless the size of pollen grains is known, it is often impossible to positively identify tetraploids on anything but a complete herbarium specimen. Therefore, it appears premature to regard the tetraploids as a separate species.

In summary, the common oxeye daisy of North America has a somatic chromosome number of 18 and appears to be the typical *Chrysanthemum leucanthemum* L. s. str. Plants with a somatic number of 36 also occur on this continent but the stands are rela-

tively few and localized. Plants with somatic numbers of 18, 36 and 54 occur in Europe; the tetraploid plants are somewhat commoner than the diploids and hexaploids are rare.

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NOTES ON THE DISTRIBUTION OF OHIO COMPOSITAE: I. HELIANTHEAE, ANTHEMIDEAE[1]

Robert W. Long

This series of observations was made during the preparation of "A Preliminary List of the Compositae of Ohio."[2] The plants named below are those whose occurrence in Ohio is poorly understood judging from the information given in Gray's Manual (1950) and The New Britton and Brown Illustrated Flora (1952). Most of these plants were introduced into Ohio as weeds either from Europe or from western states. This illustrates, however, the

[1] This study was aided in part by a grant from the Ohio Academy of Science.

[2] Long, Robert W. (1957) A preliminary list of the Compositae of Ohio. The Ohio Flora Comm., Ohio State University, Columbus, Ohio.

changing composition of the state flora, especially with respect to the *Compositae*.

All specimens cited here are deposited in the Herbarium of the Ohio State University, and the identifications all have been verified by the writer.

HELIANTHEAE

Ambrosia bidentata Michx. This western species of prairies and other dry places is apparently known only from the extreme southern portion of the state, in the Allegheny Plateau. It was undoubtedly introduced from regions west, but the evident delimitation to the unglaciated portion of Ohio cannot be explained at this time. COLLECTION DATA: Jackson Co. Madison Twp., in a cornfield four miles NE. Thurman, *Floyd Bartley and Lawrence Hicks*, Aug. 14, 1955. Also, specimens were examined from Adams, Gallia, and Lawrence counties.

Ambrosia psilostachya DC. var. **coronopifolia** (T. & G.) Farw. Another western ragweed, this plant appears to be limited to the extreme northern part of the state. It is no doubt adventive from the West, with collections being made chiefly from railroad yards, and other waste places. COLLECTION DATA: Lake Co., N. Y. Central R. R. at Perry, *Fred J. Tyler*, July 23, 1933. Also, Huron and Ottawa counties.

Coreopsis verticillata L. This is a plant of dry woods and is found in the southeastern states. Its occurrence in Ohio is considerably north of its center of distribution. Only one collection was seen and the species is probably very rare. COLLECTION DATA: Clark Co., Silver Lake near New Carlisle, *John H. Schaffner*, Aug. 30, 1929.

Helianthus angustifolius L. This species is known only from one county at the southeastern edge of the state. It is probably an escape from cultivation, or otherwise introduced. Typically, this plant grows in moist places in southeastern United States, but extends inland to Kentucky and Indiana. There are two separate collections from the same county in Ohio. COLLECTION DATA: Washington Co. in an old field, 3 mi. N. Marietta, *Floyd Bartley*, Oct. 20, 1951.

The genus *Helianthus* is well-represented in the state and a number of putative hybrids have been identified. They are *Helianthus* × *ambiguus* T. & G. pro. sp., *H.* × *luxurians* Watson pro. sp., *H. giganteus* × *mollis*, *H. occidentalis* × *grosseserratus*, and *H. petiolaris* × *annuus*. *Helianthus brevifolius* Watson was based on a collection from Lake county and the type has been examined. The status of this name is not clear at present, but it appears to refer to a hybrid of *Helianthus grosseserratus* and *H. divaricatus* (*H.* × *divariserratus* Long), judging from the size, shape, and arrangement of leaves. COLLECTION DATA: Lake Co., Richmond, *Otto Hacker*, 1894, (TYPE).

Rudbeckia hirta L. var. **Brittonii** (Small) Fern. This variety is distinguished from the typical one by the presence of oblong phyllaries. Known from West Virginia, this record represents a westward extension for the variety. COLLECTION DATA: Coshocton Co. *Harold N. Moldenke 13293*, July 25, 1942.

Rudbeckia tenax Boynt. & Beadle. A single collection from southern Ohio, this would constitute an eastward range extension for the species, previously reported for Indiana and Illinois. COLLECTION DATA: Adams Co. SW. corner Oliver Twp., openings, post oak area, *E. Lucy Braun*.

Silphium laciniatum L. Schaffner has noted on a collection from Franklin Co. that this plant is probably not native to Ohio, but rather is adventive from the West. In his Revised Catalogue,[3] however, he lists it as apparently indigenous. Its chief distribution occurs in the prairies of Michigan and North Dakota, Oklahoma, and Texas. It is known from widely separated areas in Ohio. One of the collections is from the unglaciated, southern tip of the state. COLLECTION DATA: Lawrence Co., collected in an old field along route 141, 1.6 mi. S. Wilgus, 200 plants in one patch; *Floyd Bartley and Lawrence Hicks*, Aug. 3, 1952. Also, specimens from Franklin and Summit counties.

ANTHEMIDEAE

Achillea Ptarmica L. A single collection with "flowers not doubled," probably escaped from local cultivation. In general, this collection is south of the chief Midwestern area of distribution for this species. COLLECTION DATA: Franklin Co., *W. H. Camp*, June 1, 1934.

Anthemis arvensis var. **arvensis** L. A single collection, but at this location very abundant as a weed, evidently. According to the distribution given in Gray's Manual this would be a westward range extension. COLLECTION DATA: Highland Co., Hillsboro, B. & O. freight yards, *Katie M. Roads*, June 22, 1931.

Anthemis arvensis var. **agrestis** (Wallr.) DC. Differing from the typical variety by the presence of chaff shorter than disk flower; more common than the preceding, but from widely scattered localities in Ohio. COLLECTION DATA: Greene Co., in a yard near Fairborn, *Clara Weishaupt*, June 25, 1953. Other collections from Lorain and Auglaize counties.

Anthemis mixta L. The occurrence of this plant as a weed is a westward extension of the range given in the manuals; A single collection. COLLECTION DATA: Lake Co. Painesville, Ohio; *Otto Hacker*, July 28, 1901.

Anthemis tinctoria L. From four widely separated areas of Ohio, probably commoner than indicated here. COLLECTION DATA: Marion Co., *R. A. Dobbins*, August 24, 1937. Other collections from Fairfield, Guernsey, and Lake Counties.

Artemsia albula Woot. This species is not given in either manual and is definitely a plant of the western plains, specifically of Texas, Colorado, and New Mexico. It was collected, however, outside of cultivation, and the specimen is typical in every way according to its description. COLLECTION DATA: Coshocton Co. along fence row, Mill Creek watershed, *H. N. Moldenke 13320*, July 28, 1942.

Matricaria Chamomilla L. From the collections seen, this plant is

[3] SCHAFFNER, JOHN H. (1932) Revised Catalogue of Ohio Vascular Plants. Ohio Biol. urvey 5: 89–215.

found in widely scattered portions of the state as an occasional weed. COLLECTION DATA: Pike Co., Jackson Twp., in an old field head of Toad Heaven Hollow; *Floyd Bartley*, May 17, 1947. Other collections from Greene, Lake, Lawrence, and Ottawa counties.—DEPARTMENT OF BOTANY, OHIO WESLEYAN UNIVERSITY, DELAWARE, OHIO

A TAXONOMIC STUDY OF THE GENUS PHYSALIS IN NORTH AMERICA NORTH OF MEXICO

U. T. WATERFALL

(*Continued from p. 114*)

KEY TO GROUPS OF SPECIES OR TO UNIQUE SPECIES

1. Corolla yellow, yellowish-green or white, with or without darker spots; plant surfaces without crystalline vesicles; enlarging ovules all of one kind.
   2. Corolla with broad shallow sinuses between the lobes; fruiting calyx reddish.....1. *P. Alkekengi.*
   2. Corolla truncate; fruiting calyces not red.
      3. Plants covered with stellate or variously branched trichomes, or glabrous with a few stellate hairs on the sepals or sometimes on the leaf margins.....GROUP I.
      3. Plants nearly glabrous, or variously hairy, but branched hairs, if present, very small and inconspicuous and usually much less numerous than the short unbranched hairs mixed with them.
         4. Anthers (2) 3–5 mm. long; perennials excepting *P. izocarpa* and *P. Wrightii*.....GROUP II.
         4. Anthers (.5) 1–2.3 (2.8) mm. long; annuals
            5. Plants nearly glabrous, usually with a few short curved or appressed hairs on the sepals or young parts. GROUP III.
            5. Plants long-hairy, sometimes with shorter hairs or glands intermixed.....GROUP IV.

1. Corolla blue to purple (rarely white), or yellow and with plump seedlike corky bodies mixed with the reniform seeds.
   6. Corolla blue to purple (rarely white), rotate; no corky bodies mixed with the seeds; herbage with few to many crystalline vesicles, sometimes giving it a scurfy look.....21. *P. lobata.*
   6. Corolla yellowish, funnelform; plump, rounded, corky seedlike bodies mixed with the reniform seeds.....22. *P. Carpenteri.*

GROUP I

1. Hairs stellate, each ray sometimes rebranched, the verticils sometimes in more than one series, and sometimes the branches irregularly arranged; or plant with a coat of short stellate hairs, plus either long-stiped branched hairs, or simple hairs.
   2. Leaves ovate to narrowly linear, their blades mostly 2.5–6 times longer than the petiole, sometimes decurrent on it; corolla usually not dark spotted, or with spots not very prominent in herbarium specimens (rarely with prominent dark spots and more or less spathulate leaves); maritime

plants extending from southeastern Va. to the Gulf Coast of Texas.

3. Leaf blades ovate, spathulate, lanceolate or linear-lanceolate (sometimes linear in intergrades with *P. angustifolia*); mostly stellate-vestite, but nearly glabrous in one form of var. *Elliottii*.
4. Leaf blades ovate to spathulate.
5. Leaves with definite petioles usually about one-third to one-fourth the length of the blade; whole leaf (1.7) 2–3 (3.4) times longer than wide; se. Va. to Fla.
6. Leaf blades usually 2–4 (5) cm. wide.
2a. *P. viscosa*, var. *maritima*, f. *maritima*.
6. Leaf blades usually 5–7 cm. wide.
2a. *P. viscosa*, var. *maritima*, f. *latifolia*.
5. Leaves tapering to the base, or extending gradually into winged petioles; whole leaf (2) 2.5–4 (4.7) times longer than wide; Gulf Coast of Texas.
2c. *P. viscosa*, var. *spathulaefolia*.
4. Leaf blades lanceolate to linear-lanceolate; leaves mostly 2.5–10 times longer than wide.
7. Plants stellate-vestite .... 2b. *P. viscosa*, var. *Elliottii*, f. *Elliottii*.
7. Plants glabrous except on the margins or the tips of the sepals, and sometimes on the leaf margins.
2b. *P. viscosa*, var. *Elliottii*, f. *glabra*.
3. Leaves linear, often ca. 8, but sometimes from 1–20 times longer than wide; plant glabrous except the tips or margins of the sepals .... 3. *P. angustifolia*.

2. Leaves mostly ovate, sometimes reniform, ovate-deltoid, or ovate-lanceolate, their blades mostly (1.2) 1.5–2 (3) times as long as their petioles; corolla dark-spotted; mostly plants of the south central plains, but extending to the Gulf Coast of Texas.
8. Hairs 1–4 mm. long on at least the calyx or the base of the stem, in addition to stellate hairs covering herbage .. 4. *P. variovestita*.
8. Plants without hairs 1–4 mm. long intermingled with shorter stellate ones.
9. Flowering calyces (6) 7–10 mm. long; vestiture forming a dense mat, at least beneath the leaves; leaves dentate.
2d. *P. viscosa*, var. *mollis*.
9. Flowering calyces mostly (3) 5–7 (9) mm. long; vestiture usually sparse; leaf margins dentate, undulate or entire.
2e. *P. viscosa*, var. *cinerascens*.

1. Hairs jointed, those of the stem mostly 1–2 mm. long and spreading at right angles to the stem giving it a bristly appearance; hairs 2- or 3-branched, not having a second coat of short stellate hairs .... 5. *P. pumila*.

GROUP II

1. Long cord-like rhizomes present near the surface of the soil; found in Fla. and adjacent areas.
2. Plants with hairs short and antrorse, sometimes viscid.
6a. *P. arenicola*, var. *arenicola*.
2. Plants ciliate with jointed hairs 1.5–2 mm. long.
6b. *P. arenicola*, var. *ciliosa*.

1. Plants with deeply buried, seldom-collected rhizomes, or possibly other perennating structures, or, in one species, annual.
3. Anthers blue, ca. 3 mm. long; corolla blue- or purple-spotted; leaves lanceolate; perennials of s. Ariz. and adjacent Mexico. 11. *P. caudella.*
3. Anthers often yellow; if anthers blue, then plants not lanceolate-leaved perennials with purple-spotted corollas native to s. Ariz. and adj. Mexico.
4. Corolla usually dark-spotted near the base of its limb; flowering peduncles 3–15 mm. long; if corolla not noticeably dark-spotted, then flowering peduncles ca. 3–8 mm. long.
5. Flowering peduncles usually 10–15 mm. long; corolla limb usually not reflexed when fully open; plants primarily of the eastern and northern U. S.
6. Vestiture villous; hairs jointed.
7. Filaments as wide as the anthers to about one-third as wide, sometimes clavate; leaves blunt to pointed; anthers yellow to light blue.
8. Anthers (3) 3.5–4.5 mm. long; filaments often clavate.
9. Bases of stems not thickened and subligneous.
10. Vestiture of stems various, but not of abundant hairs 2–4 mm. long. 7a. *P. heterophylla*, var. *heterophylla.*
10. Vestiture of abundant hairs 2–4 mm. long; Ala. and Fla. ..... 7c. *P. heterophylla*, var. *villosa.*
9. Bases of stems thickened and subligneous; se. Va. ..... 7b. *P. heterophylla*, var. *clavipes.*
8. Anthers (2) 2.5 (3) mm. long; filaments not clavate ..... 9a. *P. virginiana*, var. *virginiana.*
7. Filaments slender; leaves acuminate; corolla spots and anthers deep blue-purple; introduced ..... *P. peruviana.*
6. Vestiture not villous.
11. Flowering calyx campanulate, the lobes spreading, 4–5 mm. wide at base and 15–20 mm. wide at tips. 9g. *P. virginiana*, var. *campaniforma.*
11. Flowering calyx not as above.
12. Hairs of stem short, retrorse. 9a. *P. virginiana*, var. *virginiana.*
12. Hairs not short and retrorse, often antrorse.
13. Anthers light blue, or tinged with light blue.
14. Fruiting calyx 2.5–3.5 cm. long and 2–3 cm. wide . . 9b. *P. virginiana*, var. *subglabrata*, f. *subglabrata.*
14. Fruiting calyx 4–5 cm. long and 3–4 cm. wide . . 9b. *P. virginiana*, var. *subglabrata*, f. *macrophysa.*
13. Anthers yellow.
15. At least a few stiff spreading hairs about 1 mm. long on the flower buds, leaf margins or stems; thick-leaved plants of the prairie region westward, usually in sand. 9e. *P. virginiana*, var. *hispida.*

15. Plants without stiff spreading hairs.
16. Principal leaves ovate; plants nearly glabrous usually several-branched from the base, and spreading; s. Tex. 9c. *P. virginiana*, var. *texana*.
16. Principal leaves usually lanceolate to linear, if ovate then plant not with several spreading branches from near the base.
17. Plants usually single-stemmed, erect; larger basal leaves usually 5–10 cm. long.....9d. *P. virginiana*, var. *sonorae*.
17. Plants usually branched from the base; larger basal leaves usually 4–5 cm. long; s. Colo....9f. *P. virginiana*, var. *polyphylla*.

5. Flowering peduncles usually 3–8 mm. long; corolla limb often reflexed when fully open; plants primarily of the southern Rocky Mts. and westward.
18. Plants with long jointed hairs mixed with shorter hairs, or with glandular ones, or with only long jointed hairs.
19. Flowering calyx 8–11 mm. wide; anthers 1.5–3 mm. long; leaf blades frequently rotund; mostly in the north central prairies extending west into the Rockies.....10b. *P. hederaefolia*, var. *comata*.
19. Flowering calyx 4–8 mm. wide; anthers 3–4 mm. long; sw. Tex. to Colo. and westward. 10a. *P. hederaefolia*, var. *hederaefolia*.
18. Plants without long jointed hairs; short hairs, or glandular ones present.
20. Anthers yellow, not prominently twisted after dehiscence; perennials.
21. A few short stiff branched hairs with a spread of ca. 1 mm. present at least on the calyces, sometimes abundant; leaves ovate to lanceolate. 10c. *P. hederaefolia*, var. *cordifolia*.
21. Small branched hairs not present; leaves mostly ovate.....10a. *P. hederaefolia*, var. *hederaefolia*.
20. Anthers blue, 3 mm. long; strongly twisted after dehiscing; annuals.....13. *P. ixocarpa*.

4. Corolla not dark spotted, or with slightly darkened spots which hardly show when dry, sometimes turning blue when dry.
22. Flowering peduncles 3–8 (10) mm. long, shorter than the flowers, or about equalling them.
23. At least some of the hairs short, stiff and branched. 10c. *P. hederaefolia*, var. *cordifolia*.
23. None of the hairs short, stiff and branched. 10a. *P. hederaefolia*, var. *hederaefolia*.
22. Flowering peduncles (10) 12–20 (50) mm. long, somewhat longer than the flowers to several times their length.

24. Corolla rotate, with 5 hairy pads exposed on its limb near the short tube; anthers blue, usually 2.5–3 mm. long; annuals.....14. *P. Wrightii.*
24. Corolla not rotate with 5 hairy pads exposed on its limb; anthers not blue and 3 mm. long; perennials.
25. Corolla remaining yellow when dried; leaves thick, often entire; flowering calyces usually 4–6 mm. long on peduncles from little longer than, to 6 or 7 times their length ..... 12a. *P. crassifolia*, var. *crassifolia.*
25. Corolla often drying with a blue tinge; leaves thin, often toothed; flowering calyces usually 3–4 mm. long on peduncles 5–10 times their length.
12b. *P. crassifolia*, var. *versicolor.*

GROUP III

1. Fruiting calyx rather rounded, or 10-ribbed, but not strongly 5-angled.
2. Leaves ovate to ovate-lanceolate; corollas usually 6–10 mm. long.
3. Flowering peduncles usually 5–15 mm. long (as much as 3 times the length of the calyx); fruiting peduncles usually 20–30 mm. long, shorter than, to equalling, the fruiting calyces which are 25–35 mm. long; flowering calyces usually 4–5 mm. long with teeth 2–2.5 mm. long; s. U.S.
15a. *P. angulata*, var. *angulata.*
3. Flowering peduncles usually 15–40 mm. long (3–13 times the length of the calyces); fruiting peduncles usually 20–40 mm. long, equalling to 3 times as long as the shorter fruiting calyces which are 20–25 mm. long; flowering calyces usually ca. 3 (4) mm. long with teeth ca. 1 mm. long; s. cent. U. S.....15b. *P. angulata*, var. *pendula.*
2. Leaves lanceolate to linear-lanceolate; corollas usually 4–5 mm. long; sw. U. S.....15c. *P. angulata*, var. *lanceifolia.*
1. Fruiting calyx sharply and strongly 5-angled; corolla with 5 evident dark spots.....16b. *P. pubescens*, var. *glabra.*

GROUP IV

1. Corolla dark spotted; anthers usually some shade of blue or purple.
2. Fruiting calyces 1.5–2.5 (3) cm. wide.
3. Anthers (1.2) 1.5–2 mm. long; plants without capitate-glandular hairs, but sometimes viscid-glandular or with sessile glands.
4. Leaves having a greyish surface, often with "mealy" or sessile glands; leaf blades usually toothed nearly to the base; mostly northeastern U. S...16d. *P. pubescens*, var. *grisea.*
4. Leaves not greyish, not having sessile glands.
5. Leaves usually toothed nearly to the base with 5–8 teeth on each side of the seldom translucent blade; widespread.....16a. *P. pubescens*, var. *pubescens.*
5. Leaves with few teeth, 3–4 on each side, or entire; blades mostly flaccid and translucent.
16a. *P. pubescens*, var. *integrifolia.*

3. Anthers (.3) 1–1.5 mm. long; capitate-glandular hairs usually mixed with long jointed ones. 17. *P. foetens*, var. *neomexicana*.
2. Fruiting calyces (2.5) 3–4 cm. wide; s. Ariz. ..... 18. *P. latiphysa*.
1. Corolla yellow, unspotted, or sometimes slightly dark-tinged.
6. Flowering peduncles 2–5 mm. long, about equalling to twice as long as the calyces ..... 19. *P. missouriensis*.
6. Flowering peduncles mostly 15–20 (30) mm. long, 4–5 (7) times the length of the calyces ..... 20. *P. Greenei*.

1. **Physalis Alkekengi** L., Species Plantarum 183. 1735; incl. *P. Francheti* Mast. in Gard. Chron. **2:** 434 and 441. 1894.

Plants perennial, erect, usually unbranched, 30–60 cm. tall, glabrous or with a few scattered long hairs; leaves broadly ovate, or ovate-rhombic, the blades usually 5–12 cm. long and 4–9 cm. wide on petioles 2–4 cm. long; margins of the leaf blades from entire to irregularly few-toothed or undulate-dentate; flowers white, slightly 5-lobed with broad shallow sinuses about 2 mm. deep between the apices of the lobes; corollas 10–15 mm. long and 15–25 mm. wide; anthers 2.5–3 mm. long on slender filaments; flowering calyces 4–7 mm. long and 4–5 mm. wide, densely hairy with jointed trichomes about 1–1.5 mm. long; fruiting calyces reddish, 3–5 cm. long and 2.5–4 cm. wide, pendent on peduncles 2–3 cm. long.

TYPE: Not seen; Linnaeus states, "Habitat in Italia."

This species is cultivated or escaped, in northeastern U. S.; flowering in June; 19 sheets examined.

2. **Physalis viscosa** L., Species Plantarum 183. 1753; other synonymy under the varieties to which the names are referred.

Perennials covered with stellate, or several-branched hairs, or nearly glabrous and having stellate hairs only on the calyces; leaves from ovate to linear-lanceolate, petiolate or with blade tapering to the stem; corolla yellowish, funnelform, with or without darker spots on the limb near its base, 8–20 mm. long; anthers yellow, about 3 mm. long; flowering calyx 3–10 mm. long on peduncles 10–20 mm. long; fruiting calyx 2–5 cm. long and 1.5–4 cm. wide on peduncles 1–4 cm. long.

P. viscosa L., ssp. **viscosa.** *P. viscosa* L., loc. cit., as limited to the South American plants. Linnaeus cited *P. viscosa* from "Virginia, Bonaria." Since (1) only one element of this species, the part described by Chapman as *P. maritima*, barely extends into southeastern Virginia, since (2) it hardly matches the photographs of the Linnean types, and since (3) previous authors have restricted the application of the specific name, in its strictest sense, to the plants of South America, the present author believes that it is best to so delimit it.

South American material is usually more sparsely vestite with finer stellate hairs than most of ours, and has corollas slightly spotted to unspotted.

Occasionally in our populations of *P. viscosa, sens. lat.*, there appears a specimen which can hardly be distinguished from South American collections. Whether these are introductions from that continent, or represent gene combinations from within our population which produce phenotypes

similar to the South American plants, it is impossible for the author to determine.

Some examples are: Alabama: Alabama Co.: *Mohr 26* (NY); Texas: Brazoria Co.: *Young* Apr. 22, 1918 (TEX); Houston Co.: *Fisher* July 25, 1914 (UC); Walker Co.: *Warner* 29 (NY).

P. fuscomaculata de Rouville ex Dunal, at least as to the few collections seen, is included here.

P. viscosa ssp. **maritima** (M. A. Curtis) Waterfall, comb. et stat. nov., based on *P. maritima* M. A. Curtis, Am. Journ. Sci. ser 2. 1: 407. 1849. Under this subspecies are included the maritime varieties listed below.

2a. **P. viscosa** var. **maritima**; *P. Walteri* Nuttall, Journ. Acad. Nat. Sci. Phila. 7: 112. 1834; type from "South Carolina" (PH); *P. maritima* M. A. Curtis, loc. cit.; *P. viscosa* L., var. *maritima* (Curtis) Rydberg, Mem. Torr. Bot. Club 4: 357. 1896.

The varietal name is used above as a tautonym of ssp. *maritima*. However, since the author is utilizing the varietal concept for taxa with both morphological and distributional differences, taxa which he considers the principal subdivisions of complex species, and is using the subspecific catagory as an aggregation of similar varieties, he would prefer to transfer the specific name, in this case *maritima*, to the varietal status, letting the tautonym, without author citation, belong to the aggregate subspecies. This does not seem permissible under Article 15 of the International Rules.

Leaves ovate to spathulate, especially the upper ones; whole leaf (1.7) 2–3 (3.4) times longer than wide; from sparsely to usually densely vestite.

TYPE: *M. A. Curtis*, seacoast, North Carolina (GH); probable isotype, "sandy seacoasts" (NY).

This taxon grows on sandy seacoasts, southeastern Va. to Fla.; usually flowering in March, April and May, but sometimes in winter in the southern part of its range; 120 sheets of 93 collections seen.

Occasional is a large, broad-leaved form with leaf blades about 5–7 cm. wide as contrasted to the usual width of 2–4 (5) cm. in forma *maritima* (supra). It may be described as **P. viscosa** f. **latifolia** Waterfall, f. nov., laminis 5–7 cm. latis. The type is *Small, Mosier* and *DeWinkeler 10892* (NY); isotype (GH); north part of Jupiter Island, Florida. Also seen from Florida were: Dade Co.: *Moldenke 384* (DUKE), *Small 2116* (NY).

2b. **P. viscosa** var. **Elliottii** (Kunze) Waterfall, comb. et stat. nov., based on *P. Elliottii* Kunze, Linnaea **20**: 33. 1847.

Leaf blades lanceolate to linear-lanceolate; leaves mostly 2.5–10 times longer than wide; plants covered with stellate hairs, or nearly glabrous; corollas yellow, usually not dark-spotted, but sometimes prominently so.

TYPE: *Rugel* June 1843, "Ad ostium fluvii St. Marks in Florida" (NY). The type belongs to the vestite phase although it is only sparingly stellate on the leaf-surfaces and the stem.

This taxon grows in sands, Florida; apparently flowering throughout the year.

P. viscosa f. **Elliottii.** The following citations selected from 73 sheets of

58 collections: FLORIDA: Broward Co.: *Moldenke 479* (DUKE, NY); Clay Co.: *Williamson* Aug. 1893 (PH); Dade Co.: *Small* and *Mosier 5944* (DUKE, GH, NY); *Moldenke 715* (NY); Hernando Co.: *McFarlin 6079* (MICH); Highlands Co.: *Correll* and *McFarlin 6219* (DUKE); Hillsboro Co.: *Churchill* Mar. 21, 1923 (GH, PH); Indian River Co.: *Small 8894* (NY); Lee Co.: *Mosier* July 1928 (DUKE, NY); Manatee Co.: *Tracy 7577* (GH, NY); Monroe Co.: *Sargent 6417* (ARIZ); Pinellas Co.: *McFarlin 3653* (MICH); St. John Co.: *Meredith* Feb. 4, 1899 (PH); Sarasota Co.: *McFarlin* July 1931 (MICH).

P. viscosa var. **Elliottii.** f. **glabra** Waterfall, f. nov., foliis glabris, sepalis stellato-vestitis. Stellate hairs are found on the flowering sepals, or at least on their margins; a few are rarely present on the margins of the leaves. The TYPE is *Tracy 7608*, Sanibel Island, Lee County, Florida (NY), isotype (GH).

Selected from 42 sheets of 33 collections: FLORIDA: Collier Co.: *Deam 60785* (DUKE); Dade Co.: *Small 7410* (NY); Hillsborough Co.: *McFarlin 5525* (MICH); Lee Co.: *Hitchcock 237* (GH, NY); Monroe Co.: *Palmer 376* (GH); Pinellas Co.: *Deam 1948* (UC); Sarasota Co.: *McFarlin 6091* (MICH).

An unusual, compacted short-leaved phase is sometimes found. It is represented by the following: *Small, Britton* and *DeWinkeler 2328*, pineland-prairie, Tamiami trail west of Miami, Dade Co., Dec. 19, 1919; *Small 8894*, pinelands near Felsmere, Indian River Co., May 17, 1918; *Small* and *DeWinkler 9979*, Ancient sand dunes near Kuhiman, April 25, 1921, all in Florida. If there proves to be a population in this area, similar to the cited collections, it will probably justify nomenclatural recognition.

2c. **P. viscosa** var. **spathulaefolia** (Torr.) Gray, Proc. Amer. Acad. Arts and Sci. **10:** 67. 1875. *P. lanceolata* Michx., var. *spathulaefolia* Torr., Bot. Mex. Bound. 153. 1859.

Leaf blades ovate to lanceolate to spathulate, tapering at base, or extending gradually into winged petioles; whole leaf (2) 2.5–4 (4.7) times longer than wide; corolla varying from apparently unspotted to having prominent dark spots; Gulf Coast of Texas; flowering irregularly throughout the year.

TYPE: *Schott 30*, seabeaches, Rio Bravo (Rio Grande?), Texas (NY).

The following selected from 65 sheets of 54 collections: LOUISIANA: Calcasieu Parish: *Palmer 7707* (PH); TEXAS: Aransas Co.: *Tharp 1620* (OKLA, TEX); Austin Co.: *Pennell 10271* (NY, PH); Brazoria Co.: *Cory 51057* (GH); Cameron Co.: *Clover 1724* (MICH); Galveston Co.: *Nelson* Mar. 20, 1942 (TEX); Harris Co.: *Fisher* July 25, 1914 (NY); Jefferson Co.: *McVaugh 6880* (MICH); Kenedy Co.: *Tharp 48333* (OKLA, TEX); Matagorda Co.: *Wright* (GH); Nueces Co.: *Tharp, Johnson* and *Webster* Dec. 3, 1948 (TEX); San Patricio Co.: *Cory 51249* (GH, US); Victoria Co.: *Tharp 2512* (TEX, UC).

The following collections have prominently dark-spotted corollas: TEXAS: Austin Co.: *Tharp* Apr. 8, 1939 (TEX); Brazoria Co.: *Celerier 51–41* (OKLA); Cameron Co.: *Lundell 1073* (TEX); Kenedy Co.: *Lundell 8714* (GH, MICH, NY, UC); Willacy Co.: *Johnston 54169* (TEX).

P. viscosa ssp. **mollis** (Nuttall) Waterfall, comb. et stat. nov., based on *P. mollis* Nutt., Trans. Am. Phil. Soc. 5 (n.s.) 194. 1837. This is an inland population, here divided into two varieties, as compared with ssp. *maritima*, a maritime population divided above into three varieties.

2d. **P. viscosa** var. **mollis.** The varietal name is used here as a tautonym of ssp. *mollis*, hence it is listed without author-citation. However, the present author believes that the varietal category is best used as the principal division of a species, and that the subspecific category is most significantly used as a means of grouping varieties, just as a section may be utilized to group species within a genus.

TYPE: not seen; isotypes: *Nuttall*, Arkansas (NY, PH).

Leaves densely stellate-tomentose, at least beneath, dentate; plant usually erect; flowering calyces (6) 7–10 mm. long.

Growing in open woods, sandy areas and disturbed sites, western Arkansas, eastern Oklahoma and eastern Texas. There are many intermediates with var. *cinerascens*. Usually flowering in May and June, but specimens in flower have been collected in July and August.

Selected from 43 sheets of 34 collections; Arkansas: Franklin Co.: *Pennell 10621* (NY, PH); Pulaski Co.: *Merrill 1861* (UARK, OKLA): Sebastian Co.: *Bigelow* in 1853–54; Louisiana: Bossier Farish: *Correll 10058* (GH, DUKE, NY, PH); Jefferson Davis Parish: *Palmer 7629* (PH); Oklahoma: Choctaw Co.: *Houghton 4037* (GH, NY); Comanche Co.: *Clements 11767* (GH); Love Co.: *Hopkins 3429* (OKL); Marshall Co.: *Basler* Aug. 5, 1950 (OKL); Muskogee Co.: *Little 1515* (OKL); Texas: Callahan Co.: *Palmer 13811* (WIS); Denton Co.: *Whitehouse 15780* (MICH); Grayson Co.: *Gentry 51–392* (OKLA); Tarrant Co.: *Ruth 902* (WIS); Wilson Co.: *Rogers, Albers* and *Webster 6849* (TEX).

2e. **P. viscosa** var. **cinerascens** (Dunal) Waterfall, comb. nov., based on *P. pensylvanica* L. var. *cinerascens* Dunal, in De Candolle, Prodromus 13(1): 435. 1852; *P. mollis* Nutt., var. *cinerascens* (Dunal) Gray, Proc. Amer. Acad. Arts and Sci. **10:** 66. 1875; incl. *P. mollis* Nutt., var. *parvifolia* Rydb., Mem. Torr. Bot. Club **4:** 355. 1896.

Leaves dentate to entire, varying in size, probably due, at least in part, to seasonal heteromorphy; plants erect to spreading, or nearly procumbent; more or less densely covered with stellate hairs, but not tomentose; flowering calyx (3) 5–7 (9) mm. long; small-leaved forms have been segregated as var. *parvifolia*.

TYPE: Dunal cited "n. 83 et 2316 Berland. pl. exs. Mex." when he described var. *cinerascens*. Since he indicated no holotype, *Berlandier 2316*, circa Matamoros urbem, April 1831 (GH) is designated as Lectotype.

This taxon grows on prairies, plains and in disturbed habitats, primarily in Oklahoma and Texas, extending into Mexico; often flowering in May and June, but to some extent at any time during the growing season, which may be most of the year in southern Texas.

Four hundred twenty seven sheets of 365 collections of var. *cincerascens* (sens. lat.) have been examined. In addition to numerous Oklahoma and Texas collections, the following have been seen: ARKANSAS: Fulton Co.: *Bush 2518* (GH); Kansas: Barber Co.: *Rydberg* and *Imler 640* (NY); New Mexico: Chaves Co.: *Earle 283* (NY); Lea Co.: *Waterfall 7836* (GH, OKL).

P. pensylvanica L., Species Plantarum, ed 2, 1670, 1762, is not accounted for in the above synonymy. A tracing from the Linnean herbarium on a Canby sheet of *P. viscosa* in the Gray Herbarium bears the annotation

"pubescence very short stellular—same as in *P. viscosa* Hb. Linn." No stellate species is known from Pennsylvania. No disposition of it can be made from the photograph of the species from the Linnean Herbarium, other than to say that if it is indeed from North America, it might be a small, rotund-leafed phase of *P. viscosa*, var. *maritima*.

3. **Physalis angustifolia** Nuttall, Journ. Acad.Nat. Sci. Phila. 7: 113. 1834.

Perennial from a thick woody taproot, often with many branches; leaves linear, (8) 10–20 times longer than wide; plants glabrous except on the tips or margins of the sepals; corolla yellow, unspotted to apparently spotted, but only lightly so, 8–20 mm. long; flowering calyx 5–10 mm. long, on peduncles 10–20 mm. long; fruiting calyx 2–3 cm. long on peduncles 1–3 cm. long.

TYPE: Not seen; Isotype: *N. A. Ware* "west Florida" (PH). Its larger leaves are 6–8 cm. long and about 2–3 mm. wide.

P. angustifolia grows in coastal sands, coral soil, or pine woods, Alabama to Mississippi with one collection from Louisiana; it usually flowers from May to August, but a number of collections, particularly from Florida have been taken in flower in December, January and February.

Selected from 87 sheets of 65 collections: ALABAMA: Baldwin Co.: *Mohr* March 20, 1883 (GH, UARK); Mobile Co.: *Mohr 1878* (NY, PH); FLORIDA: Bay Co.: *Banker 3670, 3679* (NY); Collier Co.: *Moldenke 1006* (DUKE, NY); Dade Co.: *Moldenke 852* (DUKE, NY); Gulf Co.: *Correll* and *Oosting 5630* (DUKE); Monroe Co.: *Curtiss 114* (GH, MICH, NY, PH, UARK); Oskaloosa Co.: *Menzel* and *Menzel 55–3* (WIS); Santa Rosa Co.: *Fassett 21141* (WIS); Wakulla Co.: *Griscom 21478* (GH); LOUISIANA: "seashore": *Carpenter*, July (PH); MISSISSIPPI: Jackson Co.: *Baker* July 25, 1897 (NY); Harrison Co.: *Demaree 21911* (OKL, OKLA, TEX); *Tracy* May 8, 1898 (NY, MICH).

4. **Physalis variovestita** Waterfall, sp. nov. Planta bivestita, pilis elongatis, 1–4 mm. longis, articulatis, simplicibus vel furcatis, et brevo-stellatis; caulibus erectis; foliis petiolatis; laminis ovatis dentatis vel subsinuato-dentatis; pendunculis petiolis longioribus; corollis luteis, fundo-maculatis; antheris luteis ca. 3 mm. longis.

The presence of abundant jointed hairs, 1–4 mm. long, in addition to a covering of stellate hairs, is the most obvious characteristic of this species. The long hairs are sometimes branched, sometimes simple. The plant is a perennial, 12–25 cm. tall, from a rhizome. The leaf blades are ovate, dentate to more or less sinuate-dentate, 2.5–3.5 cm. long and 2–3 cm. wide on petioles 1.5–2.3 cm. long. The nodding flowers are on peduncles 2–3 cm. long. The corolla is 1.5–2 cm. long and 2–3 cm. wide, with large dark markings on its limb near its junction with the tube. The flowering calyx is about 1 cm. long divided about one-third to one-half of the way into ovate-lanceolate, or lanceolate lobes. The anthers are yellow, ovate to ovate-oblong, about 3 mm. long.

TYPE: *Eula Whitehouse 18179*, back of Rockport Tourist cottages in sandy soil, live-oak belt, Rockport, Aransas Co., Texas, April 21, 1947 (MICH).

A number of collections radiating northward from this area have long articulated hairs present to a greater or lesser extent. These are found in specimens resembling both var. *mollis* and var. *cinerascens*, with a degree of variability in leaf size, margins, and stellate vestiture similar to that found in these two taxa.

Sheets approaching the type in vestiture are: Kenedy Co.: *Cory 28408* (GH); Medina Co.: *Johnston, Tharp* and *Turner 3401* (OKLA, TEX).

Collections more widely diverging from *P. variovestita*, but with several to few long jointed trichomes present in addition to the short stellate hairs are: Austin Co.: *Pennell 10300* (NY, PH); Bexar Co.: *Metz 477* (UC); Caldwell Co.: Coll. unknown (J. B. McB.) 1931 (TEX); Cameron Co.: *Tharp 1206* (TEX); DeWitt Co.: *Reidel* Apr. 5, 1942 (GH, OKLA); Gillespie Co.: *Bray 293* (TEX); Gonzales Co.: *Bogusch 1868* (TEX); *Cory 8366* (GH); *Turner 3706* (TEX); Jim Hogg Co.: *Tharp* June 17, 1928 (TEX); Hidalgo Co.: *Cameron 269* (TEX); Kenedy Co.: *Johnston 53256.19* (TEX); *Lundell 8715* (GH); Upshur Co.: *Reverchon 3237* (NY); Victoria Co.: Coll. unknown Mar. 29, 1930 (TEX); Waller Co.: *Hall 500* (GH, NY); Wilson Co.: *Cory 7795* (GH); *Parks 29530* (GH); Wood Co.: *McMullen* June 10, 1927 (TEX).

It is postulated that a population such as described above, and exemplified by the type collection, must exist in the area indicated in southern Texas, and that gene interchange has diluted its characteristics with those of *P. viscosa* var. *mollis* and var. *cinerascens* in an area radiating northward. Probably Edgar Anderson's method of extrapolated correlates (1949) could have been used to predict the occurrence of *P. variovestita* on the basis of the intergrades found in approaching the area in which it grows.

5. **Physalis pumila** Nuttall, Trans. Am. Phil. Soc. 5 (n.s.); 193, 1836; *P. lanceolata* Michx., var. *hirta* Gray, Proc. Amer. Acad. Arts and Sci. **10:** 68. 1875.

Plants perennial, 15–45 cm. tall, often branched, usually covered with jointed hairs 1–2 mm. long, some of which are 1- to rarely 3-branched, and which spread at right angles from the stem. Leaf blades ovate to ovate-lanceolate, or rarely lanceolate, sometimes somewhat rhombic, tapering to a more or less winged petiole; larger blades (4) 6–9 cm. long and (2.5) 3–5 cm. broad, on petioles 1–3 cm. long; leaf margins usually entire, but sometimes lightly and irregularly sinuate-or repand-dentate; corolla 12–20 mm. long, and about 15–25 mm. wide at the top; anthers usually 2.5–3 mm. long, yellow; flowering calyx usually 10–15 mm. long with free lanceolate-deltoid sepal tips about one-third as long; flowering peduncles 15–30 mm. long; fruiting calyx usually 15–20 mm. wide and 3–4 cm. long, much inflated around the fruit, on reflexed peduncles 25–40 mm. long.

TYPE: Not seen; Isotype: *Nuttall*, Arkansas (PH). The isotype is representative of the extreme having few branched hairs. It was collected near the eastern limit of its range in this area.

P. pumila grows in prairies, open woods and disturbed habitats, primarily in western Missouri, eastern Kansas, eastern Oklahoma and adjacent Texas; it usually flowers in May, June, July and August, perhaps earlier in the southern part of its range, as fruiting specimens have been collected in May in Texas.

The 169 sheets of 146 collections examined include: ARKANSAS: Sebastian Co.: *Armstrong 186* (TEX, UARK); Carrol Co.: *Moore* and *Iltis 204* (WIS); Washington Co.: *Hill 23* (UARK); ILLINOIS: Peoria Co.: *Chase 3570* (NY, UC).

6. **Physalis arenicola** Kearney, Bull. Torr. Bot. Club **21**: 485. 1894.

Plants perennial from cord-like rhizomes which are near the surface, usually 15–30 cm. tall, simple or branched; hairs short and antrorse, sometimes viscid, in var. *ciliosa* 1–2 mm. long, jointed, spreading and more or less abundant; leaf blades ovate to ovate-rhombic, the larger ones usually 2–6 cm. long and 2–4 cm. wide on petioles 1–3 cm. long; leaf margins irregularly dentate to sinuate or entire; corollas 10–20 mm. long, yellow with slightly darker spots on the limb near its base; flowering calyx 7–11 mm. long, its lobes 2–4 mm. long; flowering peduncle 10–25 mm. long; fruiting calyx 20–30 mm. long and 15–25 mm. wide, much inflated around the fruit.

TYPE: Kearney cited several collections of Nash's when he described *P. arenicola*. Since no holotype was designated, the author selects the following from among the cited collections: *George V. Nash 1170*, dry sandy soil, high pine land, vicinity of Eustis, Lake County, Florida, July 1–15, 1895 as the lectotype (GH); Isolectotypes: (NY, UC).

This species grows on sand dunes, ridges, sandy oak woods, pine woods and disturbed sandy areas, primarily in Florida, but also in adjacent Georgia and Mississippi; flowering March through August.

6a. **P. arenicola** var. **arenicola.** Selected from 28 sheets of collections: FLORIDA: Alachua Co.: *Wiegand* and *Manning 2810* (GH); Brevard Co.: *Curtiss 5713* (GH, UC); Duval Co.: *Curtiss 6644* (GH, NY, UC); Lake Co.: *Nash 1170* (GH, UC); Levy Co.: *Garber* Nov. 1877 (GH); Marion Co.: *Moldenke 1090* (DUKE); Palm Beach Co.: *Small 8514* (DUKE, GH); Sumter Co.: *Curtiss 6634* (GH); Volusia Co.: *Small 8692* (DUKE, GH); Georgia: Lowndes Co.: *Harper 1594* (GH, NY).

6b. **P. arenicola** Kearney, var. **ciliosa** (Rydb.) Waterfall, comb. et stat. nov., based on *P. ciliosa* Rydb., Mem. Torr. Bot. Club **4**: 346. 1898.

TYPE: In describing *P. ciliosa*, Rydberg stated "Chapman (in Herb. J. Donnell Smith, Harvard University, Columbia College, and A. W. Chapman, type)." As Lectotype the author chooses a sheet (GH) showing both flowering and fruiting plants. Isolectotypes are: GH, a second sheet, NY and OKL.

Selected from 35 sheets of 33 collections: FLORIDA: Alachua Co.: *Walker 1917* (OKLA); Brevard Co.: *Small* and *DeWinkeler 2468* (NY); Gadsden Co.: *Berg* (NY); Hendry Co.: *Moldenke 1018* (DUKE, NY); Highlands Co.: *Small, Mosier* and *DeWinkeler 10906* (NY); Lee Co.: *Moldenke 946* (DUKE, NY); Levy Co.: *Oosting 139* (DUKE); Osceola Co.: *Singletary* Apr. 28, 1938 (DUKE); Polk Co.: *McFarlane 5021* (MICH); Santa Rosa Co.: *McFarlane* and *Goertz* June 17, 1905 (DUKE); Sarasota Co.: *Rusby* April 1935 (NY); Sumter Co.: *Curtiss 6634* (UC); GEORGIA: Calhoun Co.: *Thorne 3321* (GH); Chatham Co.: *Gay* (GH); Charlton Co.: *Small* June 12–15, 1895; MISSISSIPPI: Jackson Co.: *Skehan* May 10, 1895 (GH).

The following specimens, all from Florida, seem to be intermediate between var. *arenicola* and var. *ciliosa:* Collier Co.: *Small 10477* (NY);

Dade Co.: *Small* and *Small 6825* (GH, NY); Volusia Co.: *Small 8692* (GH, DUKE).

7. **Physalis heterophylla** Nees, Linnaea **6**: 463. 1831; synonymy cited under the varieties.

Stems usually erect from a deeply buried rhizome, 15–90 cm. tall, simple or branched; herbage densely to sparsely covered with varying proportions of short usually viscid hairs and glandular hairs, together with long jointed hairs which are usually 1–2 mm. long; sometimes only a few long hairs are present; rarely, as in var. *villosa*, the stems are villous with long multicellular hairs; leaf blades usually broadly to narrowly ovate, or ovate-rhombic, the principal ones usually 5–10 cm. long and 3.5 to 6 cm. wide on petioles 3–6 cm. long; corollas 10–18 mm. long, yellow with brownish, sordid or blue-tinged spots on the limb near its base; flowering calyx 7–12 mm. long, its lobes 3–5 mm. long, lanceolate-triangular, sometimes acuminate; anthers usually 3–4.5 mm. long, yellow, sometimes tinged with blue; filaments thickened, often as wide as the anthers, frequently clavate; fruiting calyx usually 2.5–3 cm. long and 2–3 cm. wide, much inflated around the fruit, borne on peduncles 1.5–4 cm. long.

7a. **P. heterophylla** Nees, var. **heterophylla** *P. virginiana* Mill., var. *ambigua* Gray, Proc. Amer. Acad. Arts and Sciences **10**: 65. 1875; *P. nyctaginea* Dunal, DeCandolle, Prodromus **13**(1): 440–441. 1852; *P. ambigua* (Gray) Britton, Mem. Torr. Bot. Club **5**: 287. 1894; *P. heterophylla*, var. *umbrosa* Rydberg, Contr. U. S. Natl. Herb. **3**: 172. 1895; *P. heterophylla*, var. *ambigua* (Gray) Rydberg, Mem. Torr. Bot. Club **4**: 349. 1896; *P. sinuata* Rydb., in Small's Flora: 986. 1913.

This is an extremely variable assemblage as indicated in the preceding description, which, with stated exceptions, covers var. *heterophylla*, only two other localized varieties being recognized. Forms (the species or varieties of earlier authors) might be distinguished on the basis of dentation of leaves, or of vestiture, but many specimens would be assignable only on an arbitrary basis, even if some of the extremes seem quite striking. An example is the densely stiff-haired form often found on sands at various localities in the range of the species.

TYPE: Not seen; "In collibus argillosis Pennsylvanicae Poeppig legit."

Habitat, range and flowering time: Open woods, prairies, hillsides, fields and other disturbed habitats, principally in the eastern United States and adjacent Canada, the prairie and plain region westward into the central and northern Rockies and the Great Basin; flowering from June to August in Canada and from April to September in Texas.

In examining 730 sheets of 664 collections, material has been seen from: Ontario and Quebec, Canada and from Alabama (Jackson and Tuscaloosa Cos.), Georgia (Chatham and Clark Cos.), Idaho (*Allen 1873*), Illinois, Indiana, Massachusetts, Michigan, Minnesota, Mississippi (Harrison Co.), Missouri, Nebraska, New Hampshire, New Jersey, New York, North Carolina, North Dakota (Richland Co.), North Carolina, Ohio, Oklahoma, Pennsylvania, Rhode Island, South Carolina (Oconee Co.) South Dakota, Tennessee (Davidson, Frank and Rutherford Cos.), Texas, Utah (Salt Lake Co.), Vermont, Virginia, Washington, D. C., West Virginia, Wisconsin, Wyoming (Big Horn and Crook Cos.).

7b. **P. heterophylla** Nees, var. **clavipes** Fernald, RHODORA **49**: 178. 1947.

TYPE: *Fernald, Long* and *Clement 15347*, sandy woods near Darden's Pond, northeast of Courtland, Southampton Co., Virginia, (GH); isotype (NY). Known only from the type collection.

7c. **P. heterophylla** Nees, var. **villosa** Waterfall, var. nov., caulibus dense articulato-villosis, pilis 2–4 mm. longis.

The abundant, soft, long, jointed hairs, 2–4 mm. long, characterize this variety. The leaf size and margin vary in a manner comparable to var. *heterophylla*.

TYPE: *Earle* June 2, 1901, moist hillsides thick woods, Lee County, Alabama (NY).

Collections examined: ALABAMA: Lee Co.: *Earle* June 2, 1901 (NY); *F. S. Earle* May 10, 1896, Auburn (NY); FLORIDA: Gadsden Co.: *Berg* Summer (NY); Walton Co.: *A. H. Curtiss* June 1886, De Funiak Springs (NY); County undetermined: *W. E. Buswell* April 9, 1931, Pine Woods, East Fort Meyers (NY); TEXAS: doubtfully referred here is *Tharp* April 19, 1930, East Texas coast (TEX).

P. heterophylla appears to intergrade with *P. virginiana* in some areas, producing individuals with varying indument and leaf-shape, including lanceolate. Such specimens are found in South Carolina from which Michaux described his *P. lanceolata*, Flora Boreali-Americana 149. 1803. Examples are: *Gibbes*, in 1834, Columbia, S. Car. (NY); *Gibbes* Aug. 1835, South Carolina (NY); *Ravenel*, Aiken, South Carolina (NY). The photograph of the type of *P. lanceolata* in the Gray Herbarium appears to match these specimens fairly well. The author believes that it was on such a specimen that Michaux based his species. This leaves the population of the western prairies and plains, which has been passing under the name *P. lanceolata*, without a name. It will be treated under *P. virginiana*.

Other collections believed to be *P. heterophylla* intergrades are: CONNECTICUT: *Bishop* Sept. 1902, Norwich (GH); GEORGIA: *Harper 93*, Dry fields, Clarke Co., June 29, 1900 (NY); Coll. unknown (herb. Schw. sub nom. "P. obscura Baldw., Georgia") (PH); NORTH CAROLINA: *Williamson* Aug. 1900, Wilmington (PH); *Small*, July 1896, Summit of Paris Mt. (NY).

8. **Physalis peruviana** L., Species Plantarum, ed. 2, 1670. 1762. *P. peruviana*, var. *latifolia* (Lam.) Dunal, in DeCandolle, Prodromus **13**(1): 440. 1852, based on *P. latifolia* Lamarck, Tableau Encyclopédique et Méthodique . . . Bot. **2**: 29. 1793, is the only synonymy that has been applied in the area under consideration.

An erect branching perennial, densely villous but not glandular; leaf blades ovate, extending into an acuminate tip; corolla blue-spotted; anthers about 3 mm. long, blue, on slender filaments. This species resembles *P. heterophylla*, but may be distinguished by the narrow filaments and the rather strongly acuminate leaves, as well as by the blue anthers (sometimes the anthers are violet-tinged in *P. heterophylla*) and by the darker, bluish spots of the corolla.

TYPE: Not seen; Linnaeus says "Habitat Limae".

This species is sometimes introduced, and may rarely escape. Some examples are: *Kidder* Oct. 3, 1926, Norfolk Co., Mass. (NEBC); *Martindale* Sept. 1879 Camden, New Jersey (NY); *Brinkley 222*, Sevier Co., Arkansas (TEX) ?; *Earle* June 26, 1899, Lawrence Co., Alabama (NY) ?.

9. **Physalis virginiana** Miller, Gardener's Dictionary, ed. 8: No. 4. 1768. The synonymy is given under the varieties.

Stems from a deep rhizome, simple or branched; plants nearly glabrous, or with long hairs, or short curved trichomes; leaf blades from ovate to linear-lanceolate; corolla from 15–25 mm. long, yellow, dark-spotted; anthers 2–4 mm. long, yellow or blue- or violet-tinged; filaments from one-third as wide to nearly equalling the width of the anthers; calyx from one-half to two-thirds as long as the corolla; flowering peduncles about equalling the flower to 1½ times its length; fruiting calyx inflated, usually 25–35 mm. long and ovate to ovate-oblong, but sometimes much larger, particularly in one forma.

The varieties described below seem to intergrade more or less with each other, making the disposition of individual specimens sometimes difficult. However they seem to represent natural populations, in some instances covering large geographic areas, which are fairly distinct as groups.

9a. **P. virginiana** Miller, var. **virginiana.** *P. virginiana* Mill., var. *intermedia* Rydb., Mem. Torr. Bot. Club **4**: 345. 1895; *P. monticola* Mohr, Bull. Torr. Bot. Club **26**: 119–120. 1899.

Plants villous with long jointed hairs, or having only short retrorse ones; leaf blades ovate to lanceolate (rarely narrowly so), their margins irregularly dentate to sinuate-dentate; corolla usually 15–20 mm. long; anthers yellow, or sometimes with a blue or violet tinge.

TYPE: None cited by Miller. It is supposed to be present in the Sloane Herbarium of the British Museum.

Habitat, distribution and flowering time: Growing in open woods, prairies and disturbed areas in most of the eastern United States, and adjacent Canada, extending, generally, into the eastern part of the prairie region, with a few collections from the central Rockies; flowering in June and July in the northern part of its range, and usually from April to June in the southern part.

(*To be continued*)

FURTHER NOTES ON THE ILLINOIS FLORA.—Field trips to southern Illinois in late September and in October, 1957, yielded two plants not previously collected in Illinois, a new station for the filmy fern in the state and some additional information on the height of big bluestem.

The slender-fruited primrose willow, *Jussiaea leptocarpa* Nutt., ranges from Florida to Texas and Mexico, north to Georgia and southeastern Missouri, according to the range given by Fernald in Gray's Manual, ed. 8. While botanizing on September 25 in the

narrow neck of land known as the Dogtooth Bend in Alexander County, I found a few plants of this species[1] growing on the banks of the Mississippi River. On October 24, Dr. M. W. Sanderson, an insect taxonomist on the staff of the Illinois Natural History Survey, and I visited this site and located numerous individuals and a sizable patch of this species. From these plants Dr. Sanderson collected specimens of a flea beetle of the genus *Altica*. Because of the local abundance of the *Jussiaea* in this site in the Dogtooth Bend, we were curious to learn whether or not it was growing farther upstream. Accordingly, we stopped at Fayville, a small village opposite Commerce, Missouri, at the mouth of the Thebes Gorge of the Mississippi River and approximately 10 miles upstream from the Dogtooth Bend location. Here on the banks of the river we located some plants. We did not, however, observe this species on the riverbank at Thebes, about 5 miles upstream from Fayville. The following is a list of specimens of *Jussiaea leptocarpa* Nutt. in the Herbarium of the Illinois Natural History Survey (ILLS):

Riverbank in Dogtooth Bend, south of Miller City, Alexander County, Illinois, September 25, 1957, *R. A. Evers 55513;* October 24, 1957, *R. A. Evers 55747;* riverbank at Fayville, Alexander County, Illinois, October 24, 1957, *R. A. Evers 55781.*

The narrow-leaved sunflower, *Helianthus angustifolius* L., ranges from Florida to Texas and northward to Long Island, New Jersey, eastern Pennsylvania, Kentucky, southern Indiana and southeastern Missouri, according to Gray's Manual. Southern Illinois can now be included in the known range. On the northern limits of the village of Brookport, Massac County, I located numerous individuals of this sunflower and made collections in September and October. It was growing in an old field and was associated with *Bidens* sp. and several asters, chiefly *Aster pilosus* Willd. Herbarium sheets were provided with the following data:

Old field north of Brookport, Massac County, Illinois, September 25, 1957, *R. A. Evers 55625;* October 23, 1957, *R. A. Evers 55728.*

The filmy fern, *Trichomanes boschianum* Sturm., which ranges from Alabama, north to West Virginia, southern Ohio and southern Illinois, is rare in the northern part of its range. Its known range

[1] I wish to thank Professor G. Neville Jones, University of Illinois, for examining this and the following species and for verifying my identifications.

in southern Illinois has been restricted to Pope County and based upon collections made in only one locality, Jackson Hollow, by Mary M. Steagall in 1923, J. W. Swayne in 1950 and R. A. Evers in 1951. Plant collectors who botanize in Pope County have been seeking this fern elsewhere in the county and also in adjacent Johnson County. On October 23, Dr. M. W. Sanderson and I were collecting insects and plants in Hayes Creek Canyon, north of Eddyville, Pope County, and discovered several small patches of *T. boschianum* on an undercut in a sandstone cliff. Hayes Creek Canyon is approximately 5.5 miles east of the Jackson Hollow station of this fern. Perhaps a more intensive search in this section of Pope County will reveal other stands of *T. boschianum*. The herbarium specimen has the following label information:

Sandstone cliff, Hayes Creek Canyon, north of Eddyville, Pope County, Illinois, October 23, 1957, *R. A. Evers 55741*.

Thieret and Evers[2] reported on culms of big bluestem, *Andropogon gerardi* Vitman, that measured 3 meters tall. While examining a prairie slope on the James M. Nelson property northwest of Alton, Madison County, on October 17, Mr. Nelson and I observed some culms which we believed to be taller than 3 meters. We collected and measured one of the culms and found it to be 3.5 meters (about 11.5 feet) tall. This culm exceeded by 1.5 meters the maximum height for this species as it is described in Hitchcock-Chase, Manual of the Grasses of the United States, and by 2 meters as indicated by Fernald in Gray's Manual, ed. 8. Apparently the weather conditions in Illinois in 1957 favored the tall and luxuriant growth of big bluestem.—Robert A. Evers, Illinois Natural History Survey, Urbana.

[2] Rhodora **59** (701): 124.

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